

# Display and Video Output Configurations - Docking Stations

The following describes display and video output configurations supported by ThinkPad systems in docking and non-docking configurations.


1. ThinkPad Thunderbolt 3 Workstation Dock (170W/230W)(40AN, 40AN0230XX, 40AN0170XX)
2. ThinkPad Thunderbolt 3 Dock Gen 2 (40AN, 40AN0135XX)
3. ThinkPad Basic Docking Station (40AG, 40AG0090XX)
4. ThinkPad Pro Docking Station (40AH, 40AH0135XX)
5. ThinkPad Ultra Docking Station (40AJ, 40AJ0135XX)
6. ThinkPad Hybrid USB-C and USB-A Dock (40AF, 40AF0135XX)
7. ThinkPad Thunderbolt 3 Dock (40AC, 40AC0135XX)
8. ThinkPad Workstation Dock (40A5, 40A50230XX)
9. ThinkPad OneLink+ Dock (40A4, 40A40090XX)
10. ThinkPad Basic Dock (40A0, 40A00000WW), ThinkPad Basic Dock 65W (40A00065XX), ThinkPad Basic Dock 90W (40A00090XX)
11. ThinkPad Pro Dock 65W(40A1, 40A10065XX), 90W (40A1, 40A10090XX)
12. ThinkPad Ultra Dock 90W (40A2, 40A20090XX) and ThinkPad Ultra Dock 135W, 170W (40A20135XX, 40A20170XX)
13. ThinkPad USB-C Dock (40A9, 40A90090XX)
14. ThinkPad USB-C Dock Gen 2 (40AS, 40AS0090XX)
15. Matrix for USB3.0 to DVI/VGA adapter (0B47072) and Lenovo Universal USB 3.0 to VGA/HDMI Adapter (4X90H20061) on Docks to support multi monitors

**ThinkPad Thunderbolt 3 Workstation Dock (170W/230W) (40AN, 40AN0230XX, 40AN0170XX)**  
 (<https://support.lenovo.com/us/en/solutions/PD500252>)



**Thunderbolt 3 WorkStation Dock (170W)    Thunderbolt 3 WorkStation Dock (230W)**

Video Display support Matrix

Display Config	NB Built-in LCD	DP1	DP2/HDMI 2	HDMI 1	TBT downstream	Remark
1	-	3840*2160@60Hz			 <a href="#">Back to top</a>	

display	-		DP2: 3840*2160@60Hz or HDMI2 3840*2160@60hz			
	-			3840*2160@60Hz		
	-				3840x2160@60hz or 5K@60hz	
2 displays	ON	3840*2160@60Hz				
	ON		DP2: 3840*2160@60Hz or HDMI2 3840*2160@60hz			
	ON			3840*2160@60Hz		
	ON				3840x2160@60hz	
	-	3840*2160@60Hz	3840*2160@60Hz			
	-		3840*2160@60Hz	3840*2160@60Hz		
	-	3840*2160@60hz		3840*2160@60Hz		
3 displays	-	3840*2160@60hz x1 + 2560 x 1440@60Hz x1			3840*2160@60hz	
	-	3840*2160@60Hz	3840*2160@30Hz	3840*2160@30Hz		
	ON	2 x 3840*2160@60Hz				
	ON	3840x2160@60Hz			3840x2160@60Hz	
4 displays	-	1 x 3840*2160@60Hz + 2 x 1920*1080@60Hz Or 3 x 2560*1440@60Hz			3840*2160@60hz	for NV dGFX module only
	ON	3840*2160@60Hz x1 + 3840*2160@30Hz x2				for NV dGFX module only
	ON	3840*2160@30Hz x2			3840*2160@60hz	for NV dGFX module only

ThinkPad Thunderbolt 3 Dock Gen 2 (40AN, 40AN0135XX) (<https://support.lenovo.com/us/en/solutions/PD500252>)




Back to top



### Video Resolution on TBT3 System (DP1.2)

Thunderbolt 3 Dock Gen2 could support DP1.4 resolution, Video resolution depends on system side.

Display Config	NB Built-in LCD	DP1	DP2/HDMI 2	HDMI 1	TBT downstream	Remark
1 display	-	3840*2160@60Hz				
	-		DP2: 3840*2160@60Hz or HDMI2: 3840*2160@60hz			
	-			3840*2160@60Hz		
	-				3840x2160@60hz or 5K	Only able to be supported by X1 Carbon (5 <sup>th</sup> and 6 <sup>th</sup> ), X1 Yoga (2 <sup>nd</sup> and 3 <sup>rd</sup> ) with TBT AR DP solution from system side
2 displays	ON	3840*2160@60Hz				
	ON		DP2: 3840*2160@60Hz or HDMI: 3840*2160@60hz			
	ON			3840*2160@60Hz		
	ON				3840x2160@60hz	
	-	3840*2160@30Hz	3840*2160@30Hz			 Back to top
	-		3840*2160@30Hz	3840*2160@30Hz		

	-	3840*2160@30hz		3840*2160@30Hz		
	-	3840*2160@60Hz			3840*2160@60Hz	Only able to be supported by X1 Carbon (5 <sup>th</sup> and 6 <sup>th</sup> ), X1 Yoga (2 <sup>nd</sup> and 3 <sup>rd</sup> ) with TBT AR DP solution from system side
3 displays	-		3840*2160@30hz	3840*2160@30Hz	3840*2160@60hz	
	-	3840*2160@30Hz	3840*2160@30Hz		3840*2160@60Hz	
	-	2560*1600@60hz	1920*1080@60hz	1920*1080@60hz		
	-	3840*2160@30Hz	1920*1080@60Hz	1920*1080@60Hz		
	ON	3840*2160@30Hz	3840*2160@30Hz			
	ON		3840*2160@30Hz	3840x2160@30Hz		
	ON	3840*2160@30hz		3840x2160@30Hz		

### VIDEO RESOLUTION ON – USB-C SYSTEM

Thunderbolt 3 Dock Gen2 could support DP1.4 resolution, video resolution depends on system side.

Below matrix shows video resolution on ThinkPad USB-C systems (DP1.2):

- Up to 4k@30Hz max resolution support via single DP port or HDMI port
- Dual 1080p digital displays via 2 DP ports or HDMI ports

Display Config	NB Built-in LCD	DP1	DP2/HDMI 2	HDMI 1	TBT downstream
1 display	-	3840*2160@30Hz			N/A
	-		DP2: 3840*2160@30Hz or HDMI: 3840*2160@30hz		
	-			3840*2160@30Hz	
	-				
2 displays	ON	3840*2160@60Hz			
	ON		DP2: 3840*2160@30Hz or HDMI: 3840*2160@30hz		
	ON			3840*2160@30Hz	
	-	1920*1080@60Hz	1920*1080@60Hz		
	-		1920*1080@60Hz	1920*1080@60Hz	
	-	1920*1080@60Hz		1920*1080@60Hz	
3 displays	ON	1920*1080@60Hz	1920*1080@60Hz		
	ON		1920*1080@60Hz	1920*1080@60Hz	
	ON	1920*1080@60Hz		1920*1080@60Hz	



Back to top

ThinkPad Basic Docking Station (40AG, 40AG0090XX) (<https://support.lenovo.com/us/en/solutions/PD500172>)



#### Video Display support Matrix

Basic Dock	DP	VGA
1 video output	4096*2160@60Hz	
		2048*1536@85Hz

ThinkPad Pro Docking Station (40AH, 40AH0135XX) (<https://support.lenovo.com/us/en/solutions/PD500174>)



Back to top



#### Video Display support Matrix

Pro Dock	DP	DP
1 video output	4096*2160@60Hz	
		4096*2160@60Hz
2 video outputs	4096*2160@30Hz	4096*2160@30Hz

ThinkPad Ultra Docking Station (40AJ, 40AJ0135XX) (<https://support.lenovo.com/us/en/solutions/PD500173>)



#### Video Display support Matrix



Back to top

Ultra Dock	DP	HDMI	DP	VGA
1 Video Output	4096*2160@60Hz			
		4096*2160@60Hz		
			4096*2160@60Hz	
				2048*1536@85Hz
2 Video Outputs	4096*2160@30Hz	4096*2160@30Hz		
	4096*2160@30Hz		4096*2160@30Hz	
	4096*2160@60Hz			2048*1536@85Hz
		4096*2160@30Hz	4096*2160@30Hz	
		4096*2160@60Hz		2048*1536@85Hz
			4096*2160@60Hz	2048*1536@85Hz
3 Video Outputs	4096*2160@60Hz	1920*1080@60Hz	1920*1080@60Hz	
	4096*2160@30Hz	4096*2160@30Hz		2048*1536@85Hz



Back to top

ThinkPad Hybrid USB-C and USB-A Dock (40AF, 40AF0135XX)  
<https://support.lenovo.com/us/en/solutions/PD500180>



#### Video Display support Matrix

	Group1		Group2	
Display Config	DP1	HDMI1	DP2	HDMI2
1 Display	5120x2880@60Hz, need bundle DP1&DP2 to the monitor.			
1 Display	4096x2160@60Hz			
		4096x2160@60Hz		
			4096x2160@60Hz	
				4096x2160@60Hz
2 displays	3840x2160@60Hz		3840x2160@60Hz	
		3840x2160@60Hz		3840x2160@60Hz
	3840x2160@60Hz			3840x2160@60Hz
		3840x2160@60Hz	3840x2160@60Hz	



[Back to top](#)

ThinkPad Thunderbolt 3 Dock (40AC, 40AC0135XX) (<https://support.lenovo.com/us/en/solutions/acc100356>)





Maximum Resolution/ Refresh Rate Support

The following matrix shows the multi video outputs with maximum resolution on compatible ThinkPad systems docked with ThinkPad Thunderbolt 3 Dock.

Display Config	Integrated bulit-in Notebook Display	DisplayPort 1(DP 1)	DisplayPort2(DP 2) / HDMI*	VGA	ThunderBolt downstream	Remark
<b>1 display</b>	-	3840*2160@60Hz				
	-		DP2: 3840*2160@60Hz or HDMI: 3840*2160@30Hz			
	-			1920*1200@60Hz		
	-				3840x2160@60Hz	
<b>2 displays</b>	ON	3840*2160@60Hz				
	ON		DP2: 3840*2160@60Hz or HDMI: 3840*2160@30Hz			
	ON			1920*1200@60Hz		
	ON				3840x2160@60Hz	<a href="#">Back to top</a>

	-	3840*2160@30Hz	3840*2160@30Hz			
	-	3840*2160@30Hz		1920*1200@60Hz		
	-		3840*2160@30Hz	1920*1200@60Hz		
	-	3840*2160@60Hz			3840*2160@60Hz	
	-		3840*2160@60Hz or HDMI: 3840*2160@30Hz		3840*2160@60Hz	Only able to be supported by X1 Carbon 5th gen & X1 Yoga 2nd gen
<b>3 displays</b>	-		3840*2160@30Hz	1920*1200@60Hz	3840*2160@60Hz	
		3840*2160@30Hz		1920*1200@60Hz	3840*2160@60Hz	
	-	3840*2160@30Hz	3840*2160@30Hz		3840*2160@60Hz	
	-	2560*1600@60Hz	1920*1080@60Hz	1920*1080@60Hz		
	-	3840*2160@30Hz	1920*1080@60Hz	1920*1080@60Hz		

\* Note: DisplayPort 2 & HDMI can only has one output at a time

ThinkPad USB-C Dock (40A9, 40A90090XX)



Back to top

**Maximum Resolution/ Refresh Rate Support**

The following matrix shows the video capability of USB-C dock is able to achieve. Actual video output on the dock is based on system video performance since the video signal is passing through from system to the USB-C dock..

Display Config	DisplayPort (DP)	DisplayPort (DP)	VGA
1 display on Dock	3840x2160@30Hz		
			1920*1200@60Hz
2 displays on Dock	1920*1080@60Hz	1920*1080@60Hz	
	1920*1080@60Hz		1920*1080@60Hz
		1920*1080@60Hz	1920*1080@60Hz

ThinkPad USB-C Dock Gen 2(40AS, 40AS0090XX)



**Maximum Resolution/ Refresh Rate Support**

The following matrix shows the video capability of USB-C dock Gen2 is able to achieve. Actual video output on the dock is based on system video performance since the video signal is passing through from system to the dock.

A, Below matrix shows video resolution on ThinkPad USB-C systems (DP1.4):

Display Configure	DP1	DP2	HDMI	Remark
1 Display	3840x2160@60Hz			only able to be supported by P72/P52/P1 which support DP1.4.
		3840x2160@60Hz		
			3840x2160@60Hz	



Back to top

2 Displays	3840x2160@30Hz	3840x2160@30Hz	
		3840x2160@30Hz	3840x2160@30Hz
	3840x2160@30Hz		3840x2160@30Hz
	2560x1600@60Hz	2560x1600@60Hz	
		2560x1600@60Hz	2560x1600@60Hz
	2560x1600@60Hz		2560x1600@60Hz
3 Displays	1920x1080@60Hz	1920x1080@60Hz	1920x1080@60Hz

B, Below matrix shows video resolution on ThinkPad USB-C systems (DP1.2)

Display Configure	DP1	DP2	HDMI	
1 Display	3840x2160@30Hz			All ThinkPad systems listed in support scope
		3840x2160@30Hz		
			3840x2160@30Hz	
2 Displays	1920x1080@60Hz	1920x1080@60Hz		
		1920x1080@60Hz	1920x1080@60Hz	
	1920x1080@60Hz		1920x1080@60Hz	
3 Displays(LCD off)	1024x768@60Hz	1024x768@60Hz	1024x768@60Hz	

[ThinkPad Workstation Dock \(40A5, 40A50230XX\) \(/redirect/B697B003-94C2-418E-914F-23C201052DB1\)](/redirect/B697B003-94C2-418E-914F-23C201052DB1)



Back to top



Product	Graphics Mode	ThinkPad Video Output					Docking Video Output			Maximum displays simultaneously supported (system + docking)
		ThinkPad LCD	Mini DisplayPort (mDP) out	Thunderbolt 1	Thunderbolt 2	HDMI	DP or HDMI	DP or DVI	VGA	
ThinkPad P50	Hybrid	x	x (selectable while docked)	x	N/A	x	x	x	x	5 - any combination
	Discrete	x	x (selectable while docked)	x	N/A	x	x	x	x	4 - any combination
ThinkPad P70	Hybrid	x	x Cannot be used while dock has monitor	x	x	x	x	x	x	5 - any combination
	Discrete	x	x Cannot be used while dock has monitor	x	x	x	x	x	x	4 - any combination

**Maximum Resolution/ Refresh Rate Support**

The following matrix shows the video capability of Workstation dock is able to achieve. Actual video output on the dock is based on system video performance since the video signal is passing through from system to the Workstation dock.

	Bank 1 DisplayPort -1	Bank 1 HDMI	Bank 2 DisplayPort -2	Bank 2 DVI -D	Bank 3 VGA
1 Display	3840 x 2160 @60Hz				
		3840 x 2160 @30Hz			
			3840 x 2160 @60Hz		
				1920 x 1200 @60Hz	
					1920 x 1200 @60Hz



Back to top

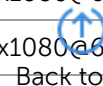
<b>2 Displays</b>	3840 x 2160 @30Hz		3840 x 2160 @30Hz		
	3840 x 2160 @60Hz			1920 x 1200 @60Hz	
	3840 x 2160 @60Hz				1920 x 1200 @60Hz
		3840 x 2160 @30Hz	3840 x 2160 @30Hz		
		3840 x 2160 @30Hz		1920 x 1200 @60Hz	
		3840 x 2160 @30Hz			1920 x 1200 @60Hz
			3840 x 2160 @60Hz		1920 x 1200 @60Hz
				1920 x 1200 @60Hz	1920 x 1200 @60Hz
<b>3 Displays</b>	3840 x 2160 @30Hz		3840 x 2160 @30Hz		1024 x 768 @60Hz
	1920 x 1200 @60Hz			1920 x 1200 @60Hz	1920 x 1200 @60Hz
		3840 x 2160 @30Hz	3840 x 2160 @30Hz		1024 x 768 @60Hz
		1920 x 1200 @60Hz		1920 x 1200 @60Hz	1920 x 1200 @60Hz

**ThinkPad OneLink+ Dock (40A4, 40A40090XX) (/documents/acc100252)**

4k2k Display Capability:

The following matrix shows the multi video outputs with maximum resolution on ThinkPad Yoga 260 docked with ThinkPad OneLink+ Dock

Display	LCD	Dock DisplayPort 1 (DP1)	Dock DisplayPort 2 (DP2)	Dock VGA
<b>Single Display</b>	Depends on system	-	-	-
	-	3840x2160@30Hz	-	-
	-	-	3840x2160@30Hz	-
	-	-	-	1920x1080@60Hz
<b>Two Display</b>	ON	3840x2160@30Hz	-	-
	ON	-	3840x2160@30Hz	-
	ON	-	-	1920x1080@60Hz
	-	2560x1600@60Hz	2560x1600@60Hz	-
	-	-	2560x1600@60Hz	1920x1080@60Hz
	-	2560x1600@60Hz	-	1920x1080@60Hz
<b>Three Display</b>	ON	2560x1600@60Hz	2560x1600@60Hz	-



Back to top

ON	-	2560x1600@60Hz	1920x1080@60Hz
ON	2560x1600@60Hz	-	1920x1080@60Hz
-	2560x1600@60Hz	1920x1080@60Hz	1920x1080@60Hz

**Notice:** As long as you attached a 4K monitor to the dock, regardless what resolution you set up, your display capability is limited to single external monitor output. It's not supported to attach a second monitor.

## Maximum Resolution / Refresh Rate Support

The following matrix shows the video capability of OneLink+ dock is able to achieve. Actual video output on the dock is based on system video performance since the video signal is passing through from system to the OneLink+ dock.

Display Config	DisplayPort (DP)	DisplayPort (DP)	VGA
<b>1 display</b>	3840x2160@60Hz	-	-
	-	-	1920*1200@60Hz
<b>2 displays</b>	3840x2160@60Hz	1024*768@60Hz	-
	3840x2160@30Hz	3840x2160@30Hz	-
	3840x2160@60Hz	-	1024*768@60Hz
	3840x2160@30Hz	-	1920*1200@60Hz
<b>3 displays</b>	3840x2160@30Hz	3840x2160@30Hz	1024*768@60Hz
	1920*1200@60Hz	1920*1200@60Hz	1920*1200@60Hz

## PXE (Preboot Execution Environment) Boot Support

ThinkPad OneLink+ dock allows to PXE boot your ThinkPad OneLink+ system via a network. Please ensure your system BIOS and OneLink+ dock driver are the latest version, or upgrade them to the latest by System Update.

ThinkPad Basic Dock (40A0, 40A00000WW), ThinkPad Basic Dock 65W (40A00065XX), ThinkPad Basic Dock 90W (40A00090XX (/documents/pd027983))



Product	Graphics Card	ThinkPad Video Output			Docking Video Output	Maximum displays simultaneously supported (system + docking)
		ThinkPad LCD	VGA out	DP out	VGA	
ThinkPad	Intel	x	x	x	no docking support	3 - any

Back to top

<b>X240s</b>						combination
<b>ThinkPad X240</b>	Intel	x	x Cannot be used while docked	x	x	
<b>ThinkPad T440s</b>	Intel	x	x Cannot be used while docked	x	x	
	SWG Model	x	x	x	no docking support	
<b>ThinkPad T440</b>	Intel	x	x Cannot be used while docked	x	x	
	SWG Model	x	x	x	no docking support	
<b>ThinkPad T440p</b>	Intel	x	x	x	x	
	SWG Model	x	x	x	x	
<b>ThinkPad T540p</b>	Intel	x	x	x	x	
	SWG Model	x	x	x	x	
<b>ThinkPad L440</b>	Intel	x	x	x	x	
	SWG Model	x	x	x	no docking support	
<b>ThinkPad L540</b>	Intel	x	x	x	x	
<b>ThinkPad W540</b>	Standard Mode	x	x	x	x	
	Advanced Mode	x	x	x	x	4 - any combination
<b>ThinkPad X250</b>	Intel	x	x Cannot be used while docked	x	x	3 - any combination
<b>ThinkPad T450s</b>	Intel	x	x Cannot be used while docked	x	x	
	SWG Model	x	x	x	no docking support	
<b>ThinkPad T450</b>	Intel	x	x Cannot be used while docked	x	x	
	SWG Model	x	x	x	no docking support	
<b>ThinkPad T550</b>	Intel	x	x Cannot be used while docked	x	x	
	SWG Model	x	x	x	x	
<b>ThinkPad</b>	Intel	x	x	x	x	



Back to top



<b>L450</b>	SWG Model	x	x	x	no docking support
<b>ThinkPad W550s</b>	SWG Model	x	x Cannot be used while docked	x	x

**Note:**

- For X240, T440s, T440, X250, T450s, T450, T550, and W550s Intel Graphics both System VGA and Display output of Docking station can't be used at the same time. When Docking station is used, system has to be attached/detached to Docking station after removing VGA cable from system VGA connector.
- SWG Model means the system has both Intel integrated graphics and discrete graphics inside.

Product	Graphics Card	ThinkPad Video Output				Docking Video Output			Maximum displays simultaneously supported (system + docking)
		ThinkPad LCD	VGA out	HDMI out	DP out	DP or HDMI	DP or DVI	VGA	
<b>ThinkPad X260</b>	Intel	x	-	Cannot be used while docked	x	x	x	x	3 - any combination
<b>ThinkPad T460s</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x	
<b>ThinkPad T460</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x	
<b>ThinkPad T460p</b>	Intel/SWG	x	-	x	x	x	x	x	
<b>ThinkPad T560</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x	
<b>ThinkPad L460</b>	Intel	x	x	-	x	x	x	x	
	SWG Model	x	x	-	x	no dock support			
<b>ThinkPad L560</b>	Intel	x	Cannot be used while docked	-	x	x	x	x	
<b>ThinkPad P50s</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x	

**Note:**

- For system with Intel Graphics, VGA / HDMI on system and VGA on dock cannot output at the same time. When Docking station is used, system has to be attached/detached to Docking station after removing VGA cable from system VGA connector.
- SWG Model means the system has both Intel integrated graphics and discrete graphics inside.



Back to top

### Maximum Resolution/ Refresh Rate Support

The following matrix shows the video capability of ThinkPad Basic dock is able to achieve. Actual video output on the dock is based on system video performance since the video signal is passing through from system to the Basic dock.

	VGA
1 Display	1920 x 1200 @60Hz

ThinkPad Pro Dock 65W (40A1, 40A10065XX), 90W (40A1, 40A10090XX) (/documents/pd027981)



Product	Graphics Card	ThinkPad Video Output			Docking Video Output		Maximum displays simultaneously supported (system + docking)
		ThinkPad LCD	VGA out	DP out	DP or DVI	VGA	
ThinkPad X240s	Intel	x	x	x	no docking support		3 - any combination
ThinkPad X240	Intel	x	x Cannot be used while docked	x	x	x	
ThinkPad T440s	Intel	x	x Cannot be used while docked	x	x	x	
	SWG Model	x	x	x	no docking support		
ThinkPad T440	Intel	x	x Cannot be used while docked	x	x	x	
	SWG Model	x	x	x	no docking support		
ThinkPad T440p	Intel	x	x	x	x	x	
	SWG Model	x	x	x	x	x	
ThinkPad T540p	Intel	x	x	x	x	x	
	SWG Model	x	x	x	x	x	
ThinkPad L440	Intel	x	x	x	x	x	
	SWG Model	x	x	x	no docking support		
ThinkPad L540	Intel	x	x	x	x	x	




Back to top

ThinkPad W540	Standard Mode	x	x	x	x	x	5 - any combination
	Advanced Mode	x	x	x	x	x	
ThinkPad X250	Intel	x	x Cannot be used while docked	x	x	x	3 - any combination
ThinkPad T450s	Intel	x	x Cannot be used while docked	x	x	x	
	SWG Model	x	x	x	no docking support		
ThinkPad T450	Intel	x	x Cannot be used while docked	x	x	x	
	SWG Model	x	x	x	no docking support		
ThinkPad T550	Intel	x	x Cannot be used while docked	x	x	x	
	SWG Model	x		x	x	x	
ThinkPad L450	Intel	x	x	x	x	x	
	SWG Model	x	x	x	no docking support		
ThinkPad W550s	SWG Model	x	x Cannot be used while docked	x	x	x	

**Note:**

- For X240, T440s, T440, X250, T450s, T450, T550, and W550s Intel Graphics both System VGA and Display output of Docking station can't be used at the same time. When Docking station is used, system has to be attached/detached to Docking station after removing VGA cable from system VGA connector.
- SWG Model means the system has both Intel integrated graphics and discrete graphics inside.

Product	Graphics Card	ThinkPad Video Output				Docking Video Output		Maximum displays simultaneously supported (system + docking)
		ThinkPad LCD	VGA out	HDMI out	DP out	DP or DVI	VGA	
ThinkPad X260	Intel	x	-	Cannot be used while docked	x	x	x	3 - any combination   Back to top
ThinkPad T460s	Intel/SWG	x	-	Cannot be used while docked	x	x	x	
ThinkPad T460	Intel/SWG	x	-	Cannot be used while docked	x	x	x	

ThinkPad T460p	Intel/SWG	x	-	x	x	x	x
ThinkPad T560	Intel/SWG	x	-	Cannot be used while docked	x	x	x
ThinkPad L460	Intel	x	x	-	x	x	x
	SWG Model	x	x	-	x	no docking support	
ThinkPad L560	Intel	x	Cannot be used while docked	-	x	x	x
ThinkPad P50s	Intel/SWG	x	-	Cannot be used while docked	x	x	x

**Note:**

- For system with Intel Graphics, VGA / HDMI on system and VGA on dock cannot output at the same time. When Docking station is used, system has to be attached/detached to Docking station after removing VGA cable from system VGA connector.
- SWG Model means the system has both Intel integrated graphics and discrete graphics inside. .

**Maximum Resolution/ Refresh Rate Support**

The following matrix shows the video capability of ThinkPad Pro dock is able to achieve. Actual video output on the dock is based on system video performance since the video signal is passing through from system to the Pro dock.

	<b>Bank 1 DisplayPort</b>	<b>Bank 1 DVI-D</b>	<b>Bank 2 VGA</b>
<b>1 Display</b>	3840 x 2160 @60Hz		
		1920 x 1200 @60Hz	
			1920 x 1200 @60Hz
<b>2 Displays</b>	3840 x 2160 @60Hz		1920 x 1200 @60Hz
		1920 x 1200 @60Hz	1920 x 1200 @60Hz

ThinkPad Ultra Dock 90W (40A2, 40A20090XX) (/documents/pd028010) and ThinkPad Ultra Dock 135W, 170W (40A2, 40A20135XX, 40A20170XX) (/documents/pd028011)



Back to top



Product	Graphics Card	ThinkPad Video Output			Docking Video Output			Maximum displays simultaneously supported (system + docking)
		ThinkPad LCD	VGA out	DP out	DP or HDMI	DP or DVI	VGA	
ThinkPad X240s	Intel	x	x	x	no docking support			3 - any combination
ThinkPad X240	Intel	x	x Cannot be used while docked	x	x	x	x	
ThinkPad T440s	Intel	x	x Cannot be used while docked	x	x	x	x	
	SWG Model	x	x	x	no docking support			
ThinkPad T440	Intel	x	x Cannot be used while docked	x	x	x	x	
	SWG Model	x	x	x	no docking support			
ThinkPad T440p	Intel	x	x	x	x	x	x	
	SWG Model	x	x	x	x	x	x	
ThinkPad T540p	Intel	x	x	x	x	x	x	
	SWG Model	x	x	x	x	x	x	
ThinkPad L440	Intel	x	x	x	x	x	x	
	SWG Model	x	x	x	no docking support			
ThinkPad L540	Intel	x	x	x	x	x	x	
ThinkPad W540	Standard Mode	x	x	x	x	x	x	
	Advanced Mode	x	x	x	x	x	x	
ThinkPad X250	Intel	x	x Cannot be used while docked	x	x	x	x	

[Back to top](#)

<b>ThinkPad T450s</b>	Intel	x	x Cannot be used while docked	x	x	x	x
	SWG Model	x	x	x	no docking support		
<b>ThinkPad T450</b>	Intel	x	x Cannot be used while docked	x	x	x	x
	SWG Model	x	x	x	no docking support		
<b>ThinkPad T550</b>	Intel	x	x Cannot be used while docked	x	x	x	x
	SWG Model	x	x	x	x	x	x
<b>ThinkPad L450</b>	Intel	x	x	x	x	x	x
	SWG Model	x	x	x	no docking support		
<b>ThinkPad W550s</b>	SWG Model	x	x Cannot be used while docked	x	x	x	x

**Note:**

- For X240, T440s, T440, X250, T450s, T450, T550, and W550s Intel Graphics both System VGA and Display output of Docking station can't be used at the same time. When Docking station is used, system has to be attached/detached to Docking station after removing VGA cable from system VGA connector.
- SWG Model means the system has both Intel integrated graphics and discrete graphics inside.

Product	Graphics Card	ThinkPad Video Output				Docking Video Output			Maximum displays simultaneously supported (system + docking)
		ThinkPad LCD	VGA out	HDMI out	DP out	DP or HDMI	DP or DVI	VGA	
<b>ThinkPad X260</b>	Intel	x	-	Cannot be used while docked	x	x	x	x	3 - any combination
<b>ThinkPad T460s</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x	
<b>ThinkPad T460</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x	
<b>ThinkPad T460p</b>	Intel/SWG	x	-	x	x	x	x	x	
<b>ThinkPad T560</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x	
<b>ThinkPad L460</b>	Intel	x	x	-	x	x	x	x	
	SWG Model	x	x	-	x	no dock support			



Back to top

<b>ThinkPad L560</b>	Intel	x	Cannot be used while docked	-	x	x	x	x
<b>ThinkPad P50s</b>	Intel/SWG	x	-	Cannot be used while docked	x	x	x	x

**Note:**

- For system with Intel Graphics, VGA / HDMI on system and VGA on dock cannot output at the same time. When Docking station is used, system has to be attached/detached to Docking station after removing VGA cable from system VGA connector.
- SWG Model means the system has both Intel integrated graphics and discrete graphics inside. .

**Maximum Resolution/ Refresh Rate Support**

The following matrix shows the video capability of ThinkPad Ultra dock is able to achieve. Actual video output on the dock is based on system video performance since the video signal is passing through from system to the Ultra dock.

	<b>Bank 1 DisplayPort -1</b>	<b>Bank 1 HDMI</b>	<b>Bank 2 DisplayPort -2</b>	<b>Bank 2 DVI-D</b>	<b>Bank 3 VGA</b>
<b>1 Display</b>	3840 x 2160 @60Hz				
		3840 x 2160 @30Hz			
			3840 x 2160 @60Hz		
				1920 x 1200 @60Hz	
<b>2 Displays</b>	3840 x 2160 @30Hz		3840 x 2160 @30Hz		
	3840 x 2160 @60Hz			1920 x 1200 @60Hz	
	3840 x 2160 @60Hz				1920 x 1200 @60Hz
		3840 x 2160 @30Hz	3840 x 2160 @30Hz		
		3840 x 2160 @30Hz		1920 x 1200 @60Hz	
		3840 x 2160 @30Hz			1920 x 1200 @60Hz
			3840 x 2160 @60Hz		1920 x 1200 @60Hz
				1920 x 1200 @60Hz	1920 x 1200 @60Hz
<b>3 Displays</b>	3840 x 2160 @30Hz		3840 x 2160 @30Hz		1024 x 768 @60Hz



Back to top

1920 x 1200 @60Hz			1920 x 1200 @60Hz	1920 x 1200 @60Hz
	3840 x 2160 @30Hz	3840 x 2160 @30Hz		1024 x 768 @60Hz
	1920 x 1200 @60Hz		1920 x 1200 @60Hz	1920 x 1200 @60Hz

Matrix for USB3.0 to DVI/VGA adapter (0B47072) (/documents/pd025001) and Lenovo Universal USB 3.0 to VGA/HDMI Adapter (4X90H20061) (/documents/acc100177) on Docks to support multi monitors

Description	PN (US)	Max number of External Monitors	
		without USB3.0 to DVI/VGA adapter or USB3.0 to VGA/HDMI adapter	with USB3.0 to DVI/VGA adapter or USB3.0 to VGA/HDMI adapter
ThinkPad USB3.0 Pro Dock	40A70045US	2x	6X
ThinkPad USB3.0 Ultra Dock	40A80045US	2x	6X
Thinkpad USB3.0 Dock	0A33970	2x	6X
ThinkPad Basic USB3.0 Dock	4X10A06687	1X	6X
Thinkpad Onelink Basic Dock	4X10A06077	1X	7X
Thinkpad Onelink Pro Dock	4X10E52935	2X	8X

**\*Notice:** please find out the PN for other regions from **Quickpick**

Please take notice that these numbers do NOT include the LCD on your laptop. Example : The ThinkPad USB3.0 dock, has 2 video ports (DVI x 2), and then you can plug 4 x USB3.0 to DVI adapters on any 4 of USB3.0 ports on either dock or system, so total you can have 6 external monitors.

#### Additional information

- Docking Stations and Port Replicators: Reference Guide (<https://support.lenovo.com/solutions/migr-4tpjf4>) - A list of docking stations and port replicators
- Monitors - Reference Guide (<https://support.lenovo.com/solutions/ht037378>)
- Monitors Accessories - Reference Guide (<https://support.lenovo.com/solutions/pd014570>)

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Back to top

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Back to top

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Back to top